I found little wind to sustain the kites and enable them to lift an aerial crossbow, with which I was trying to discharge flying machine models of small diameter. I looked back at the distant mountain side as I held the kites, and I saw what I thought was a moving cloud floating along the mountain side in apparent contact with the surface, near the base of the mountain. I expected every moment that the seemingly approaching mass of mist would enshroud the kites and hide the arrow aeroplanes aloft from view. The wind velocity was probably less than six miles per hour. I waited for the cloud to approach, but it remained stationary for over two hours until rain set in, when its vaporous mass was somewhat thinned. It remained stationary with a light wind blowing right through it, but not moving it. On looking closer at the mountain, I found that a deep ravine cut the mountain side just below the cloud, and it was clear that slightly cooler air had formed a perpendicular upward column, which condensed the vapor directly above the ravine, but nowhere else.

In studying cumulus clouds I find sometimes a perpendicular circular motion like the Ferris wheel, but without much horizontal motion. In summer I have measured the velocity of cirrus clouds, and at times, during a prolonged warm wave, I have found them almost stationary. This is a rare phenomenon, which I believe is partly due to the cold air currents rising into a warmer inert mass of air. In the lower cloud levels I have seen somewhat narrow bands of vapor extending north and south. Their forward edges were often more dense than their rear edges. I think that this indicates that the cold air rises in successions of narrow ridges into a warmer stratum. The uprising long ridge of cooler air makes a dense forward edge fading away to a thinner rear edge. *If the cold ridge of air were motionless, then the warmer air of the upper stratum, even when in active motion, would have floating in it a stationary cloud.* The amount of condensation is limited in the upper warm stratum, and is soon exhausted, as shown by a long, narrow cloud formation. It is evident that the motion of the cirrus clouds from west to east is accompanied by the motion of cold air ridges from west to east and below the level of the cirrus cloud. I think the bands of clouds with heavy forward edges in the direction of motion denote rising ridges of cold air due to storm formations working their way upward from below. It indicates a specially disturbed atmospheric equilibrium. This fact is further shown by the high velocity of the stratified cumulus, sometimes making high speed from the northwest. The significant fact is that, as on the mountain side, a stationary cloud does not necessarily mean stationary air currents. This element, I think, ought to be considered in studying cloud velocities.

Although we can not entirely indorse the explanations of cloud formation given in this article by Mr. Eddy, yet we publish it because we desire to stimulate all our readers to the closest possible study or cloud phenomena until the myriad of details has been thoroughly recorded and satisfactorily explained. Sketches or photographs of cloud forms and the changes that they undergo should frequently be made, noting the direction of the wind and the detailed topography of the ground for a hundred miles to the windward. There are a number of cases on record in which a special cloud formation has been traced back a hundred miles to a distant hill, mountain, or ridge. The atmosphere is as full of eddies and standing waves as is any river at its flood flowing over a rocky bottom in what is called turbulent motion. There are many cases, such as the well-known cloud caps on mountain tops; the helm-bar cloud of the Crossfield Range, as explained in "Espy's Philosophy of Storms"; the tablecloth on Table Mountain, South Africa; in which the wind blows rapidly through a cloud. Aeronauts have been carried in their balloons directly through such clouds, and, of course, special students have always recognized the fact that the motion of a cloud is not necessarily the motion of a current of air. In fact, striated cirri and stratus formations generally move in a direction that is the resultant of the motion of the upper and lower currents between which the clouds themselves are being formed. Anyone who looks down from a hilltop upon the ocean and islands along the coast of Maine may see streaks of fog floating hither and thither, apparently in defiance of the actual movement of the air itself. Cloudy condensation may work backward or sidewise through an advancing mass of air so rapidly that the movement of the front of the cloud has no apparent connection with the movement of the air.

The penetration of a current of cold air into a mass of warm, moist air can, even in favorable circumstances, form only so slight a cloud that we doubt whether it will explain the phenomenon observed by Mr. Eddy. When the wind blows up a ravine on the mountain side the central portion of the current certainly advances much faster than the bottom or sides, and must rise faster, so that it may easily happen that it forms a cloud over the center of the ravine, just as we see clouds forming over the river valleys. It is not proper to say that slightly cooler air, rising perpendicularly, condensed the vapor in the warmer air above the ravine, but that it condensed the vapor within itself by the mechanical cooling of the air due to the work that it had to perform in expanding as it rose so rapidly. Similarly, the cirrus clouds and the long ridges of cooler air spoken of in the latter part of Mr. Eddy's article seem to us to be due to the cooling of ascending streaks and masses of moist air, not to the mixture of cold and moist air; the latter can sometimes form a slight haze, but not a thick cloud.

A CLOUD PHENOMENON AT OMAHA, NEBR.

By Rev. WILLIAM FRANCIS RIGGE, S. J., Creighton University Observatory, Omaha, Nebr.

At about fifty minutes after sunset, on July 18, 1904, my attention was attracted to a cumulus cloud about 10° high in the east-northeast which was pretty strongly illuminated by the sunlight. No other clouds, not even those near the point of sunset, showed the least trace of sunlight. The clouds were in detached bunches and covered about one-tenth of the sky. The brightness of the cloud diminished gradually, but it was still visible a full hour after sunset. The sun set on that day at 7:28 local time, or 7:52 central time.

The data I am enabled to supply are probably insufficient to measure the altitude of the cloud, which seems to have been enormous, since the sun was about 10° below the horizon.

WILLIAM NORRINGTON.

Mr. William Norrington, Observer, died at San Francisco, Cal., December 31, 1904. Mr. Norrington was born in London in 1847 and emigrated to America in time to see service in the civil war, having enlisted in the 16th U. S. Cavalry in 1863. In 1875 he entered the Meteorological Service of the Army, and, with the exception of about two years, continued in that branch of the Government service and in the Weather Bureau until his death. During the last eight years of his life he was on duty at the San Francisco station. He was a valued and faithful employee.

THE INTRODUCTION OF METEOROLOGY INTO THE COURSES OF INSTRUCTION IN MATHEMATICS AND PHYSICS.

[Continued from page 515, Monthly Weather Review, November, 1904.]

By PROF. CLEVELAND ABBE.

[Read at Chicago, Ill., November 26, 1904, before the Physics and Mathematics Sections of the Central Association of Science and Mathematics Teachers, and reprinted from School Science and Mathematics.]

Mathematics and physics go hand in hand, so closely that